

GEPHE SUMMARY

RPP5 (https://www.gephebase.org/search-criteria/?and+Gene+Gephebase=%RPP5%#gephebase-summary-title)	Gephebase Gene	GP00001009	GepheID
	Entry Status	Martin	Main curator
Published			

PHENOTYPIC CHANGE

Physiology (https://www.gephebase.org/search-criteria/?and+Trait+Category=%Physiology%#gephebase-summary-title)	Trait Category		
Pathogen resistance (https://www.gephebase.org/search-criteria/?and+Trait=%Pathogen+resistance%#gephebase-summary-title)	Trait		
Arabidopsis thaliana- Col0 - resistant	Trait State in Taxon A		
Arabidopsis thaliana- Ler-0 - resistant	Trait State in Taxon B		
Data not curated	Ancestral State		
Intraspecific (https://www.gephebase.org/search-criteria/?and+Taxonomic+Status=%Intraspecific%#gephebase-summary-title)	Taxonomic Status		
Arabidopsis thaliana (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=%Arabidopsis+thaliana%#gephebase-summary-title)	Taxon A	Latin Name	Taxon B
thale cress	Common Name	Arabidopsis thaliana (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=%Arabidopsis+thaliana%#gephebase-summary-title)	Latin Name
thale cress; mouse-ear cress; thale-cress; Arabidopsis thaliana (L.) Heynh.; Arabidopsis thaliana (thale cress); Arabidopsis_thaliana; Arbisopsis thaliana; thale kress	Synonyms	thale cress	Common Name
species	Rank	thale cress; mouse-ear cress; thale-cress; Arabidopsis thaliana (L.) Heynh.; Arabidopsis thaliana (thale cress); Arabidopsis_thaliana; Arbisopsis thaliana; thale kress	Synonyms
cellular organisms; Eukaryota; Viriplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelinae; Arabidopsis	Lineage	cellular organisms; Eukaryota; Viriplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelinae; Arabidopsis	Lineage
Arabidopsis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 3701)	Parent	Arabidopsis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 3701)	Parent
3702 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 3702)	NCBI Taxonomy ID	3702 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 3702)	NCBI Taxonomy ID
is Taxon A an Infraspecies?		is Taxon B an Infraspecies?	
Yes	Taxon A Description	Yes	Taxon B Description
Arabidopsis thaliana- Col0 - resistant		Arabidopsis thaliana- Ler-0 - resistant	

GENOTYPIC CHANGE

RPP5	Generic Gene Name	UniProtKB Arabidopsis thaliana F4JNB7 (http://www.uniprot.org/uniprot/F4JNB7)
DISEASE RESISTANCE PROTEIN RPP5; DL4505C; FCAALL.315; RECOGNITION OF PERONOSPORA PARASITICA 5; At4g16950; dl4505c	Synonyms	GenebankID or UniProtKB AK226966 (https://www.ncbi.nlm.nih.gov/nuccore/AK226966)
3702.AT4G16950.1 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier= 3702.AT4G16950.1)	String	
-	Sequence Similarities	
GO:0005524 : ATP binding (https://www.ebi.ac.uk/QuickGO/term/GO:0005524)	GO - Molecular Function	
GO:0000166 : nucleotide binding (https://www.ebi.ac.uk/QuickGO/term/GO:0000166)		
GO:0043531 : ADP binding (https://www.ebi.ac.uk/QuickGO/term/GO:0043531)		

GO - Biological Process

GO:0006952 : defense response (<https://www.ebi.ac.uk/QuickGO/term/GO:0006952>)GO:0007165 : signal transduction (<https://www.ebi.ac.uk/QuickGO/term/GO:0007165>)GO:0009817 : defense response to fungus, incompatible interaction
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009817>)

GO - Cellular Component

-	Presumptive Null
No (https://www.gephebase.org/search-criteria?/and+Presumptive Null=%27No%27#gephebase-summary-title)	Molecular Type
Gene Amplification (https://www.gephebase.org/search-criteria?/and+Molecular Type=%27Gene Amplification%27#gephebase-summary-title)	Aberration Type
Complex Change (https://www.gephebase.org/search-criteria?/and+Aberration Type=%27Complex Change%27#gephebase-summary-title)	Molecular Details of the Mutation
Partial duplication sufficient to increase resistance	Experimental Evidence
Linkage Mapping (https://www.gephebase.org/search-criteria?/and+Experimental Evidence=%27Linkage Mapping%27#gephebase-summary-title)	Main Reference
The Arabidopsis downy mildew resistance gene RPP5 shares similarity to the toll and interleukin-1 receptors with N and L6. (1997) (https://pubmed.ncbi.nlm.nih.gov/9212464)	Authors
Parker JE; Coleman MJ; Szabó V; Frost LN; Schmidt R; van der Biezen EA; Moores T; Dean C; Daniels MJ; Jones JD	Abstract
Plant disease resistance genes operate at the earliest steps of pathogen perception. The Arabidopsis RPP5 gene specifying resistance to the downy mildew pathogen <i>Peronospora parasitica</i> was positionally cloned. It encodes a protein that possesses a putative nucleotide binding site and leucine-rich repeats, and its product exhibits striking structural similarity to the plant resistance gene products N and L6. Like N and L6, the RPP5 N-terminal domain resembles the cytoplasmic domains of the Drosophila Toll and mammalian interleukin-1 transmembrane receptors. In contrast to N and L6, which produce predicted truncated products by alternative splicing, RPP5 appears to express only a single transcript corresponding to the full-length protein. However, a truncated form structurally similar to those of N and L6 is encoded by one or more other members of the RPP5 gene family that are tightly clustered on chromosome 4. The organization of repeated units within the leucine-rich repeats encoded by the wild-type RPP5 gene and an RPP5 mutant allele provides molecular evidence for the heightened capacity of this domain to evolve novel configurations and potentially new disease resistance specificities.	Additional References
Genome-wide survey of Arabidopsis natural variation in downy mildew resistance using combined association and linkage mapping. (2010) (https://pubmed.ncbi.nlm.nih.gov/20479233)	

RELATED GEPHE

Related Genes

20 (ACD6 = ACCELERATED CELL DEATH 6, ERECTA, RAC1, Resistance related Kinase 1 (RKS1), RLM1, RLM2 cluster, RLM3, RPM1, RPP1-WsA, RPP1-WsB, RPP1-WsC, RPP13, RPP2A-RPP2B, RPP4, RPP8, RPS2, RPS4, RPS5, RRS1, WRR4) ([https://www.gephebase.org/search-criteria?/or+Taxon ID=%273702%27/and+Trait=Pathogen resistance/and+groupHaplotypes=true#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon%20ID=%273702%27/and+Trait=Pathogen+resistance/and+groupHaplotypes=true#gephebase-summary-title))

Related Haplotypes

1 ([https://www.gephebase.org/search-criteria?/or+Gene Gephebase=%27RPP5%27/and+Taxon ID=%273702%27/or+Gene Gephebase=%27RPP5%27/and+Taxon ID=%273702%27#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Gene%20Gephebase=%27RPP5%27/and+Taxon%20ID=%273702%27/or+Gene%20Gephebase=%27RPP5%27/and+Taxon%20ID=%273702%27#gephebase-summary-title))

EXTERNAL LINKS

COMMENTS